

REMARKS

The Applicant submits this response in connection with the above-identified application in response to the Office Action mailed July 3, 2003. Claims 1-20 are currently pending. Claims 1-20 stand rejected under 35 USC §103 as being unpatentable over United States Pat. No. 5,531,198, issued to Adachi et al. (hereinafter Adachi). The Applicant has canceled claims 1 and 4, added claim 21 and amended claims 2-5, 8, 14, 17, and 20.

To establish a prima facie case of obviousness, three basic criteria must be met by the Examiner. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (see MPEP §2143.03).

The present application is directed to a multi-component gas analyzing method using FTIR and recites quantitatively analyzing a plurality of components in a sample based upon an absorption spectrum obtained by FTIR, calculating multi-component concentrations from a mixed gas spectrum by using a quantitative algorithm, and after calculating the multi-component concentrations, correcting for an influence due to a difference in a base gas composition between an exhaust gas and a calibration gas.

The Adachi reference is directed to a quantitative analytical method and apparatus for determining a plurality of ingredients with spectrometric analysis. More specifically, the Adachi reference discloses establishing groups of ingredients to be measured suitable to a plurality of kinds of samples to be measured, determining groups of wave number points corresponding to the respective groups of ingredients, storing the groups of wave number points, measuring the value of a sample of cross and absorption spectrum containing the groups of wave number points, using one of the groups of wave number points to calculate the concentration of values of the ingredients in the sample, determining if the calculated concentration of ingredients is appropriate for the group of wave number points used, and providing the concentration of the

ingredients. The Adachi reference fails to teach or suggest correcting for a change in the spectrum due to the difference of coexisting gas components between the sample and a standard gas. As a result, the method practiced in the Adachi reference fails to compensate for a change in the result measured by a system due to the difference of coexisting gas between the sample and the standard gas.

In the Office Action, the Examiner stated "that the calibration matrix is viewed as a correction change in the spectrum due to the coexistent gas component" and "it would have been obvious to one of ordinary skill in the art at the time of the invention to use a correction step to enhance measurement for quantitative determination." The Applicant respectfully submits that the Examiner has misread the Adachi reference. In Adachi, a quantitative algorithm is used to separate overlapping spectra and fails to contemplate correcting for a change in a spectrum due to a coexistent gas component as disclosed in the claim 21 of the present application. More specifically, Adachi teaches that a calibration matrix is used as a separating means matrix may be used in the calculation of a component concentration based on an absorption spectrum thereby reducing the time required for processing. The calibration matrix of the Adachi reference only compensates for interferences caused by the overlapping spectra of a plurality of components within a sample. As a result, the quantitative algorithm of Adachi cannot avoid calculating a carbon oxide concentration higher than actually present within a sample. In contrast to the multi-component gas analyzing method disclosed in the present application which enables a more accurate measurement of a gas sample by correcting for a change in the intensity of a spectrum, Adachi compensates for interferences caused by the overlapping spectra of a plurality of components.

In addition, the Applicants respectfully submit that the Examiner has used impermissible hindsight to recreate the invention. "To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the

claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." In re Rouffet, 47 USPQ2d 1453 (Fed. Cir.1998) "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight." In re Dembiczak, 50 USPQ2d 1614 (Fed. Cir.1999) The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure." In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Thus, "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fritch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

The cited reference fails to teach or suggest all the elements of claim 1 in accordance with MPEP §2143. As such, the Applicant respectfully submits claims 1-20 are patentably distinct from the cited prior art reference.

Conclusion


In view of the foregoing, it is submitted that all pending claims are now in condition for allowance. Allowance is respectfully requested.

If for any reason direct communication with Applicant's attorney would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned attorney at the below listed telephone number.

The Commissioner is authorized to charge any fee which may be required in connection with this Amendment to deposit account No. 50-1329.

Respectfully submitted,

Dated: 1-5-03


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